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small." He then blowed more and more and more. He then sent a dove to see how large the land surface had grown. This bird found it so large that it never came back. So Manabush was satisfied that the world (land) was big enough. He then threw down the chunks of substance he still had in his hands, and these are the mountains of the world. He then replanted the earth with mosses, trees, herbs and grasses, after which he departed for his home.

He now lives in the home of the Dawn and is the great king of all spirits.

Hunting and Fishing of Various Tribes of Indians.

ALBERT B. REAGAN.

In our day many of the old-time methods of trapping and fishing of the American aborigines have been forgotten. In the writer's twenty-two years living among the Indians he has picked up a few notes on the subject which he believes will be of interest to the public. Some of these he here adds as follows:

BRUSH FENCING FOR ANTELOPE BY THE GOSHUTE INDIANS OF UTAH.

In the picturesque valley of Deep creek, Utah, surrounded by the Deep Creek range of mountains, seventy miles south of Wendover on the Western Pacific railway, live the Shoshoni-Goship (Goshute) Indians. Here they also lived when the white man came. When discovered they lived principally on wild game, which they shot or trapped, or shot or speared after trapping. In our day but little can be obtained of their method of securing game. This is principally about their method of entrapping antelope.

At several places on the bench land rows of decayed brush are noticeable in their country, some of them miles in length. The writer thought at first that they were probably fences to keep sheep in bounds, but their very old appearance seemed to be against that theory. Upon asking the Indians about them they stated they were "antelope fences." They said they were built in chute shape on a large scale, with an opening now and then. They also said that although the antelope could jump, he would not attempt to go over this fence, but would follow it until he came to an opening through which he would pass to the other side. Then he would be killed by Indians lying in concealment near the opening.

HUNTING AND FISHING OF THE BOIS FORT INDIANS OF MINNESOTA.

The Bois Fort Indians, known as Sugwaundugahwinninewug (men of the dense-wooded forest) live in the coniferous forest about 140 miles northwest of Duluth, Minn., and 38 miles south of Fort Frances, Ontario. They number about 700, part of whom live on their reservation of 107,519.43 acres, surrounding a beautiful sheet of water known as Nett lake.

The land of the reservation is very variable in condition of soil and possible fertility. One-half of it is swamp and is known to the Indians as "muskeg" land. The nonswamp eastern part is composed of rock ridges of Couchiching rocks, flanked with clay land covered with pine and hardwood forest trees. The western part, which is not covered with swamp, is a sand region. Nett lake and its tributary streams occupy the east central part of the reservation

and the Little Fork and Nett rivers cross it. The swamp areas are in the jungle state. The dry land is still heavily timbered; while wild rice grows in the shallow lakes, so that they look like one vast wheat field in summer. As is seen, the region is practically in the virgin state. The same might be said of the region extending southward and eastward to Duluth and Lake Superior and northward to the Arctic ocean, much of which is composed of lakes and swamps.

This region is a paradise for fowl and fur-bearing animals. It is also a hunter's haven, and to it hundreds of people flock every fall to hunt ducks on the lakes and streams. It is also a great fur region, the Indians selling thousands of dollars' worth of fur annually.

The principal gamebirds are the following: Goosander (*Merganser americanus* Cass), mallard (*Anas boschas* Linn.), widgeon (*Mareca penelope* Linn.), baldpate (*Mareca americana* Gmel.), green-winged teal (*Nettion corolinensis* Gmel.), blue-winged teal (*Querquedula discors* Linn.), shoveler or spoon-bill (*Spatula olypeata* Linn.), pintail (*Dafila acuta* Linn.), wood duck (*Aix sponsa* Linn.), readhead (*Aythya americana* Eyt.), canvasback (*Aythya vallisneria* Wills.), bluebill (*Aythya marila* Linn.), lesser scaup duck (*Aythya affinis* Eyt.), ring-necked duck (*Aythya collaris* Donov.), American golden-eye (*Clangula clangula americana* Bonap.), buffalo head (*Charitonetta albeola* Linn.), old squaw (*Harelda hyemalis* Linn.), harlequin duck (*Histrionicus histrionicus* Linn.), ruddy duck (*Erismatura jamaicensis* Gmel.), Canada goose (*Branta canadensis* Linn.), white fronted goose (*Anser albifrons gambeli* Hartl.), whooping crane (*Grus americana* Linn.), sandhill crane (*Grus mexicana* Mull.), the sandpipers, ruffed grouse, spruce hen, prairie hen, and sharp-tailed grouse.

The principal animals of the region are the caribou (now extinct), moose, red deer, skunk, white weasel, mink, otter, woodchuck, pine squirrel, chipmunk, porcupine, muskrat, gray wolf, coyote, fox, beaver, marten, wild cat, mountain lion, rabbit and bear.

The principal fish are perch, pickerel, black and rock bass, and suckers.

In hunting fowl in the old times snares, bows and arrows and deadfalls were used. Now the snare is used to some extent for land birds, but all other hunting of game birds is done with the modern gun.

The fishing is done with hook and line and with nets in summer and with home-made spear through the ice in the winter. In spearing the fish through the ice the fisherman lies down over the hole he has cut, and, covering himself with a blanket so as to make it semidark, he can see the fish swimming about. It is then an easy matter to spear them. The writer has know an Indian to spear all the fish he could carry in an hour.

In hunting animals, the big game such as the moose and deer is shot with the modern rifle. Brush fences are often piled to cause the game to go in the desired direction, so it will expose itself to the hunters. In the old times deer and moose were also enticed to approach a canoe on the lake at night. The canoe had a torch in its prow. The deer or moose had gone into the water to browse or to escape mosquitoes. Seeing the torch, he would go to it, much as a moth miller is drawn to a lamp, probably out of curiosity. Nearing it, he was shot with arrows. The same scheme is now practiced, the modern gun being used instead of the bow and arrow. Sometimes he was speared or roped and taken ashore. Torch hunting was also practiced on land.

In catching small game birds, and even wolves, coyotes, lynx and bobcats, the snare is extensively used to-day, as it was in the old times. This snare is made of sinew or of wire of the size required to hold the animal expected to be caught. "Picture-frame" wire is used in snaring rabbits and hay-baling wire for the larger game. The snaring is mostly done in winter. When a trail is discovered in the snow indicating the course taken by an animal in leaving and returning to its lair, the person finding it will search for a spot where its trail passes near a tree or through a copse. He will then take a strong sinew cord or wire, and after tying an end to something solid on one side of the trail, will make a single loop about eleven inches in diameter. He will then tie the other end of the cord or wire to a tree or log on the other side of the trail. In snaring rabbits and birds only one end of the wire is tied to some stationary thing, the other end being formed into a noose. The loop or noose is then set up across the runway by means of twigs or thin sticks placed transversely across the trail, so as to bring the loop just high enough for the head of the animal to pass through. When the animal finds itself entangled, instead of backing away it will push forward, causing the noose to tighten and strangle it to death. The writer has known a Bois Fort Indian to snare half a sled load of rabbits in a single day.

Besides snaring as above, these Indians are also expert with a string. As an illustration, the writer was out surveying with two Indians. A spruce hen was heard to flutter in a near-by tree. The guide to the party sat down and took a shoestring out of one of his shoes and tied it onto the end of a stick; then made a noose in the free end. He then walked slowly up to the tree where the bird was, and with slow movement pushed the stick up past the bird so that by considerable maneuvering the noose fell over its head. A quick jerk then brought the bird down, and we had it for dinner.

In trapping animals the white man's steel traps are now extensively used. The Indian style of trapping is also still in vogue. Two systems are resorted to—the bear trap and the stake trap. Both are of the deadfall type.

The bear trap is a sort of covered pen, so made of upright posts as to leave but one entrance, to which a chute often leads. Through this the bear is compelled to pass to reach the tempting bait of meat, placed in the far end of the pen. This bait is fastened to a tiny cord. The roof of this pen is a deadfall, consisting of trunks of trees weighted down with rock sufficient to crush the beast. A disarrangement of the bait trips the deadfall. Beaver traps are made much the same way, but baited with some vegetable substance of which these animals are fond. Similar bait colored with vermilion "medicine" is also placed between two two-inch sticks laid crosswise of each other and then attached to steel traps when trapping beaver in the modern traps.

The stake trap consists of four upright posts set in the ground in such position that the ground plan between them forms a parallelogram. A floor is made of logs the long way of the space thus inclosed. A weighted roof is then placed between the posts parallel with the floor. A stake is then set without the inclosure at two alternate corners, and a brine-soaked rawhide cord is loosely stretched under the roof across the floor space between the stakes. A heavy stick or small pole is tied to the roof logs at one end, being placed as a lever over one corner post as a fulcrum; its other end is tied by a buckskin cord in loop style to the transverse buckskin cord above men-

tioned. Thus is the roof held up by this lever and the two cords. Stakes are then set so that the animal must enter the trap at the front entrance. The salted cord is a sufficient bait to tempt a rabbit or other rodent to enter the trap and gnaw the cord; and if gnawed in twain, the supported roof is dropped on the animal's back, and it is thus secured without injuring the pelt.

A HOPI DEVICE.

The Hopis catch small animals by a trip-trigger deadfall. The Hopi takes a thin, flat rock of considerable size. This he raises on one edge over some level spot and tips it to about a 45-degree angle. He then places a support post, a small but strong stick, just without the front edge of the rock thus tipped. On top of this post between it and the rock he then places a horizontal, projecting short piece of wood. This is so beveled at the end over the post that it fits the space between it and the under surface of the inclining rock and projects under it enough to support it. The outer end of this piece has a strong cord tied to it of a length that it can be wrapped once around the base of the upright post. This cord has a small stick tied to it through its middle. This cord he wraps around the post from left to right one wrap, so that the stick is on the right side of the post. Then under the rock, in line with the upper horizontally projecting stick, he places the bait stick. This he places with one end against the rock at its base. The other end he places against the end of the stick at the end of the cord, wrapped as mentioned. In this sort of pry position it keeps the string from being unwrapped, but its least move releases it, and down comes the whole structure. The bait stick is then baited. The bait is anything suitable for the animal desired to be caught. This is usually wrapped in thin cloth, so that the animal will have to pull and tear the cloth to get the bait.

HUNTING AND FISHING OF THE QUILLAYUTE INDIANS.

The Quillayute Indians live about thirty-six miles south of Cape Flattery on the Pacific coast of the Olympic peninsula, Washington. In the main, they are a fisher people and their methods of fishing and hunting are very similar to those of the other west-coast Indians.

CATCHING LAND ANIMALS AND BIRDS. In hunting large land game the modern gun is used at present, but in the old times the bow and arrow was used to effect. Game was also driven into pitfalls or onto points of land that projected into the ocean and slaughtered there. The snare was also extensively used. These were usually made of braided or twisted rawhide strips or pounded spruce-root fiber, inner spruce bark or cedar fiber. Animals were also stampeded onto pointed stakes and killed.

In the hunting of smaller animals, such as skunk, racoon, wolf, and so on, white man's traps are now used. The traps are placed in the animal's burrow entrance and carefully covered with leaves and earth. Sometimes they are placed in the runways. At other times they are set at the foot of trees, properly concealed with earth and leaves. Then above each one there is suspended the proper bait for the animal wished to be caught. And they get the animals, too. Deadfalls are also used; some with salted-cord trigger, others with the baited figure-four contrivance. Some animals were speared in their burrows—the muskrat, for instance. Much of the trapping is still done by the ancient system.

In capturing birds, especially in the old times, the eggs and young were taken from the nests, the young just before they were ready to fly. The parent birds were also killed while nesting. The method of securing them was by the slipping-up method. Snares were also used at the nests to capture the parent birds. Birds were also killed with darts and arrows. Baited deadfalls and "figure-four" traps were also used in slaughtering birds.

HUNTING THE SEA OTTER. The sea otter was killed with a club or spear when found on land in the old times, and still is. On the sea he is slipped up on while asleep and speared with a two-pronged, long-stalked spear. The Indians say that if it is shot it will sink and be lost. So they still hunt it in the ancient way.

HUNTING SEAL. The Pacific waters adjacent to the Indian village abound in both hair and fur seal. The fur seal is, of course, killed for its valuable fur, though the Indians are fond of its flesh and use its paunch to store whale oil and salmon-egg cheese. The hair seal is also killed for its flesh and for its skin and paunch. The skin, besides being used in making various articles of clothing, is turned inside out, its openings securely shut, after which it is inflated and used as a buoy in whale hunting. Both of these animals are slipped up on at their feeding grounds or while basking in the sun on the rocks. They are then harpooned with a double-headed native harpoon like the one mentioned above. If the animal is in the water or near it the modern gun is never used, as the beast would immediately sink and be lost.

HUNTING SEA LION. Many of the islands along the coast are basking places for sea lion. The beasts are usually attacked while lying asleep on the rocks, as they seem to go farther from water than the seals. Guns are now used in hunting them, also two-pronged spears. If the animal is in the water or near it the latter is the preferred weapon, provided they are supplied with buoy attachments.

FISHING. In the old times fish were speared or killed with clubs and caught in nets of spruce root or rawhide. Hooks of bone, and U-shaped spruce roots with barbed points of bone, were also used in fishing. The U-shaped hooks were large and were used in catching halibut along the halibut banks. A very similar hook, though smaller, was used in catching rock cod and other allied fish. The line used in deep fishing was a kelp stalk, a spruce-root or cedar-bark cord.

Smelt fish (Pacific sardine?) was caught with a cordage-made dip net. This was pyramidal in shape and of about a bushel in size. In fishing for this species the fisherman wades out into the surf and dips up the incoming fish in a motion much like that used in scooping corn. The fish run inshore to spawn at certain seasons of the year, one species (a small fish) in March and February and the larger kind in May and June.

Various traps are also used. The stockade trap is the one most seen. This is placed completely across the stream in stockade style. About the center there is a box-trap-shaped contrivance so arranged that a fish can go over a slanting roof-piece trap door and fall into the space beneath it within the inclosure, from which it cannot get out. His going over this trap door throws up a signal board, which indicates that a fish is in the trap. A single trap of this style has been known to catch more than a wagonload of fish in a

single day. One of the other traps used is a cone-shaped affair, constructed much like a wire rat trap, in that when a fish gets into it it cannot get out. Stockades are often used to force fish into these traps. Modern fish traps are also used.

PORPOISE HUNTING. In hunting porpoise a canoe is noiselessly shoved onto the unsuspecting beast, which is harpooned with a heavy weapon, to which buoys are attached, as in whaling, next described. The animal is quick and usually puts up quite a fight for its life, but if the harpoon is once driven deep into its body its capture is sure.

WHALING. The implements used in whaling are a two-ton canoe, innumerable inverted hair-sealskin buoys, harpoon stalks and blades, sufficient rope, and plenty of knives.

After elaborate ceremonies to make the whalers "not afraid," the whaling crew—or crews, as usually from five to seven whaling canoes go on a whaling trip—pushes out into the ocean. Seeing a whale spouting, they push their canoe noiselessly onto the unsuspecting animal, and before it is aware of their presence a huge harpoon, to which a rope of buoys is attached, is driven deeply into its body. It dives and comes to the surface dragging the buoys after it, only to be attacked again. Thus is the contest kept up till the beast floats lifeless. It is then towed ashore and cut up. Both the meat and blubber and much of the bone is saved, the last being made into knives, spears and harpoon points in the old times. At the close of caring for the valuable parts, a give-away feast and dance of four days' duration is given in the *pollatch* (city) hall of the village and all are made happy.

Frogs and Frogging.

E. C. O'ROKE.

Out in Wyoming the ranchmen have a friendly card game called solo, which is so fascinating that were it played in the daytime and participated in to a greater extent by the female of the species it would rival auction bridge as a time killer. A favorite bid in solo is "I frog." Having sat in and sat out in these friendly games—for sitting out while others sit in is part of the fun—the writer can vouch for the enjoyment that the players experience. But whether the question of frogging is what makes the game attractive should be left to the psychologists. However, be that as it may, frogging in the real sense is a sport that has the proverbial snipe hunt beaten a long way, and the evolved cave man who has not felt with his bare hands the cold, slippery body of a frog and held the croaking creature firmly throughout all his efforts to escape does not know the supreme thrill of achievement that comes to the successful hunter.

Many books have been written about frogs, and in them the amateur or the investigator can find many of the finest things in modern biology. But as far as frogging is concerned, a search through literature reveals the meagerness of our information concerning this popular sport.

"How far can a frog jump?" is often asked in laboratory outlines for the study of this master servant of biology. The student in his zeal to answer